GAS JOURNAL

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A THREE-DECKER INDUSTRY?

WITHOUT prejudice to its freedom to oppose the principle of nationalization the British Gas Council has submitted to the Ministry of Fuel and Power a statement of broad policy regarding the planning for the future of the Gas Industry under the Government's proposals for nationalization. The statement (which comprises two sets of notes—"Notes on the Organization of a Nationalized Gas Industry" and "Further Notes on the Organization and Regional Boundaries of a Nationalized Gas Industry") is the result of the mandate given to the Council 12 months ago by member undertakings at District Meetings:—

> "If nationalization is to be effected to co-operate with the Ministry of Fuel and Power in the detailed implementation of the Government's proposals so as to ensure that the nationalized structure and organization of the Gas Industry are such as to maintain an efficient and economic gas service to the public."

What has now been presented is an extremely sound factual statement which would be very helpful to any Government, whatever its politics, or with suitable reservations as to continued private and municipal ownership to the Industry itself if nationalization had never been mentioned and the Industry were addressing itself to evolutionary reconstruction from within. It does not deal with the economic considerations involved by nationalization, and is based solely on the Government's declared intention to nationalize the Industry during the life of the present Parliament. It was prepared "for discussion with and at the request of the Ministry" and "must be taken only to apply to a nationalized Gas Industry." It is *not* a B.G.C. plan for nationalization, but it *is* a plan, a very sound one, for ensuring the maintenance of an efficient and economic service. Nationalization has been very much in the air for a couple of years, and few people have had more than the haziest idea as to what it would involve in practice; here at last is the Industry's own conception of what can be done if "the worst" happens. When the policy of the B.G.C. was under discussion at the District Meetings a year ago, a small group of diehards argued that as the Industry was opposed to nationalization anyhow it should refuse to have anything to do with the implementation of any Government plan; that it should, in effect, fight to the last ditch and then let the Government do its worst. The Notes under review confirm the absolute loyalty of the Industry to its sense of public service.

The organization visualized in the Notes is a "three-decker" structure. At the top there would be a National Gas Board, concerned with finance, broad policy planning and other affairs which require handling at a national level. Under the National Board would be 11 Regional Boards for England and one each for Scotland and Wales. The 13 Regional Boards would be responsible for policy, planning, and co-ordination at regional level. Acting under the Regional Boards it is recommended that there should be operational District Management Groups each responsible for one or more undertakings dependent on the size of the undertakings, their geographical position, and other factors. The National and Regional Boards should be mainly if not wholly composed of men skilled and experienced in the affairs of the Gas Industry, both administratively and technically; the District Management Groups should consist wholly of persons well qualified and experienced in operating gas undertakings.

In accordance with its mandate, the Council accepted the invitation of the Ministry to join a Joint Consultative Committee, which at its first meeting suggested the immediate formation of a Central Gas Authority to ensure development irrespective of future ownership. In rejecting this proposal the Ministry invited the views of the Council on "the major questions of broad policy," and the first set of notes was the result. When these were submitted at the time of the fuel crisis Sir Donald Fergusson asked for information as to regional boundaries. It was difficult to lay down such boundaries without a complete survey, bearing in mind the possibilities of development, particularly on the industrial side; and so the Council enlisted the help of Mr. Stirling Everard, of the Gas Light and Coke Company, who had assisted Mr. A E Sylvester in the preparation of the Survey in connexion with the British Gas Federation Planning Report of 1943. A new survey was carried out, using the latest available statistics, and this has formed the basis of the second set of notes, which were approved by the Central Board of the B.G.C. last month.

The suggestions differ in many respects from those both in the B.G.F. Report of 1943 and in the Heyworth Report of 1945, and, as we have already said, they are confined to central, regional, and district structure and make no reference to present company and municipal ownership or possible future State ownership. The 1943 Report, dismissing nationalization as an unnecessary "revolutionary experiment," went little further than to suggest that present methods of integration should be encouraged and facilitated. The Heyworth Report proposed that ten Regional Boards should acquire the ownership and control of all the gas undertakings in their respective areas. The new proposals are that there should be a National Board, 13 Regional Boards, and an undefined number of District Management Groups, each comprising a Chairman and six members. The members of the District Management Groups might be the chief technical and administrative officials of the undertakings. But what of the 98 members of the National and Regional Boards? We must assume that to a great extent they would be drawn from those men of outstanding qualifications now serving individual undertakings, who to that extent would be deprived of their direct services. How would the gaps be filled? Well, the war has taught us that no one is indispensable, and nature has proved that there are as good fish in the sea as were ever taken out of it; and, therefore, perhaps, we may further assume that the formation of Decks 1 and 2 in our Industry would leave room for the more rapid advancement of many brilliant young men, and further that from the solid block of some 5,000 to 6,000 Directors and Committee members displaced by nationalization, would re-emerge those with the necessary

technical knowledge, drive, and breadth of view to take part in the management of the Industry which they had served hitherto.

The underlying idea of the District Management Groups is that local contact, personal consumer contact, must remain unimpaired. In any organization established in the public service the individual responsibility of the management must be retained in every area. Hitherto the holding companies have found great advantage in maintaining the local management of undertakings; the headquarters providing technical and administrative assistance in a co-ordinated way but not taking the responsibility away from the men on the spot. Another advantage in preserving the local unit is that each remains a separate accounting unit, and the annual account is the yardstick by which local efficiency can be measured.

The irregular lines on the map of proposed regional boundaries contrast markedly with the straight lines on the Heyworth Report map. The new ones ignore county, civil defence, electricity, and other boundaries and are based solely on Gas Industry requirements. Their two main differences from the Heyworth Report proposals are that they place the whole of Wales in a single region, and they divorce North London from the South, placing the South Metropolitan, Wandsworth, South Suburban, and Croydon areas in the South Eastern Region and leaving the Gas Light and Coke Company to be grouped with Tottenham and 25 other undertakings north of the Thames.

The memorandum is not intended to be anything more than a broad outline and it leaves many points still open for discussion. It does, however, make abundantly clear the attitude of the Industry—or at least that 97% of it represented by the British Gas Council—on three outstanding points: (1) that full use must continue to be made of the work of the existing organizations in the Industry; (2) that operational control must be in the hands of District Management Groups composed of men who know their jobs; and (3) that it is no less important that the top and middle tiers of the three decker structure should be mainly, if not wholly, composed of men skilled and experienced in the technical and administrative affairs of the Industry.

CO-OPERATIVE INDUSTRIAL RESEARCH

IT is said that the Kaiser once asked his Chancellor what was this "research" of which he heard so much and that the reply was "Oh! you just give these fellows a few hundred thousand marks. You may hear no more about it, or in ten years time they present you with a new discovery." Such an attitude is all very well in the more exalted circles, but in spheres where power is less absolute and resources more limited those who provide the sinews of war wish to know more of the plan of campaign and of the objectives in view.

Mr. Eugene D. Milener, Co-ordinator of General Research, American Gas Association, in a racy Address to the Staff of the Battelle Memorial Institute, drew a distinction between the very small fraction of research workers who are free to do, as the public sometimes believes, whatever their fancy dictates and those who are engaged in technical research as much as a business as a profession—men who are required to show in a reasonable time a reasonable return on the money expended on their salaries and equipment. The fact is, of course, that there is an infinite variety of research, ranging from the pursuit of some new scientific principle to the solution of a straightforward technical problem, engaging a similarly infinite variety of intellect ranging from genius to pedestrian industry.

The phenomenon of these latter years is the development of co-operative research, literally the most world-shaking example of which was that leading to the production of the atomic bomb. It differs from what Mr. Milener calls company research and company sponsored research in that its objective is not the solution of problems or the search for new methods in the development of the work and interests of one industrial concern but "pooled research where the financing, the organizing, the direction, and the ownership of results is pooled for the mutual benefit of those co-operating." With the growing volume of work which is being conducted on this basis it becomes an important matter to explain to those who provide the funds, "how co-operative research is organized, how it is concluded, how its results are handled—in plain words, what makes it tick." That is the task which Mr. Milener commended to his audience in this excellent Address. We are interested in comparing methods used to this end in America with our own.

The preliminary work, the selection of problems, the screening of projects, the development of the "Working Outline"—what goes on before work in the laboratories and research stations begins—is not very different in the U.S.A. from what it is in Great Britain. It is rather in what comes after, in the presentation of results, that our American cousins have something to teach us. "Gentlemen," said Mr. Milener to the particular research staff whom he was addressing, "I hope you are beginning to realize that, when you start work on a co-operatively sponsored research project, you are assuming a responsibility to many different companies that are spread throughout the land. *Their interest in your work is far more than academic.*"

Mr. Milener pointed out that there are two classes of readers interested in the presentation of results in the form of Research Bulletins, the executive and general readers on the one hand and the technical readers on the other. The Research Bulletin has both in mind. It opens with a preface tying it in with others which may have been published in the general programme. Then follows an Abstract of the Bulletin, then the Probem is set out followed by a Summary of Results and Conclusions. So far one rule is observed; in these opening sections nothing but "business man's language" is used. Reading no more, executives of the companies backing the co-operative research can get "a pretty good idea of what was done, why it was done, and how it was done." Mr. Milener apologises that this is unorthodox, but that "it works." We see no need for apology. A scientist who really knows his material should be able, and generally is, to give an account of it which is intelligible to any reasonably educated reader. He should not be expected to go any further than that.

These introductory chapters are followed by a purely technical account of the work in the usual sequence with "plenty of curves, formulæ, and drawings." In the presentation of results to the Industry two phases are indicated, one in which presentation is made to the general Research Conference and one in which "specialized panel sessions are held where questions are asked and the technical work is thoroughly analyzed and digested." Mr. Milener's Address can be warmly recommended to the study of all the members of the Gas Research Board. At any rate they will find it most entertaining and stimulating reading.

Too often our own research organizations present their results only in language addressed to the specialist. We need to add to that a presentation in "business man's language."

THE GOSPEL TO THE HEATHEN

SO much of the published material on the economical utilization of coal by way of gas and coke has been addressed to audiences of gas technicians, that it is not surprising, although intensely disappointing, that "there is still considerable confusion in the minds of local authorities, architects, and the public on the relative merits of different fuels." It is therefore particularly valuable and gratifying that Mr. G. C. Holliday was able to follow up the excellent work he has done in publicizing the advantages of gas and coke, both by himself and in collaboration with Messrs. Andrew and Dunning, with an excellent presentation of the case to the Public Works, Roads, and Transport Congress

sponsored by the Institution of Gas Engineers. This was preaching the gospel not to the converted but to the heathen.

Both in the Egerton and in the Simon Reports it was recognized that the standard of comfort in this country has been too low. Houses are not kept sufficiently warm and the supply of hot water is too meagre for health and comfort. And yet this low level of comfort was costing 6s. 6d. per week, equivalent to at least 5 tons of coal per annum per average family. By the intelligent use of gas and coke the the higher standard of comfort can be maintained for the expenditure of 3½ tons of coal per annum. And if this intelligent use were realized in the 4 million new dwellings which will be required in the next 10 years, at least 7 million tons of coal could be saved annually in these dwellings alone. Something over double this saving could be made in the whole domestic fuel requirement if these methods were extended to the practical limit in existing houses.

The disturbing fact is that the recommendations of the Simon and Egerton Committees are not being implemented to any great extent by local authorities. Flues are being omitted in the new houses in kitchens and bedrooms, and while this is done it is useless to talk of freedom of choice. The Ministry itself has gone no further than the recommendation that no steps be taken which will prejudice the future of either the Gas or the Electricity Industries. In this as in other directions there is need for the insistence upon a clear cut policy—in this case that houses shall be fitted with the most efficient fuel equipment, efficient, that is, in terms of coal consumption. There is no doubt, as Mr. Holliday pointed out in the admirable passage of his Paper dealing with space and background heating, that in this country the most appropriate and economical method of attaining comfortable conditions is to provide low-temperature background heating, giving 45° to 50°F. over the whole house, with facilities for topping-up to comfort levels as required. There is no doubt more than one method of doing this, and Mr. Holliday set out the alternatives and the possible developments in excellent fashion. "It is important not to underestimate the very real psychological values of a high temperature radiant heat source in a dull climate such as ours." There remain certain problems. Insulation is rendered difficult by the shortage of materials, but when it can be practised there is scope here for a saving of 30% to 50% of the total heat losses by way of walls, floors and roofs. Hot water systems by gas involve problems of the disposal of products of combustion, problems easy enough to solve if tackled in the design of new houses but troublesome in some adaptations to old property. Warm air systems for background heating from solid fuel appliances are not yet fully worked out even in America, where they have been practised for a long time. Watson House is doing great work in searching for and providing solutions to these and other problems. But in the long run it all comes down to Mr. Holliday's closing paragraph "Whether or not the valuable contribution that can be made by the Gas Industry in effecting this very large saving of coal, and in providing at the same time the new standards of heat services, is realized, largely depends" (we should have said, almost entirely depends) "on the Ministries and Local Authorities whose responsibility it is to implement the recommendations of the Simon Committee."

Mr. A. Higgs, who addressed the Congress on Town Gas in Industry and Commerce, had an easier task. Here it is a question of business complicated only slightly by political and psychological considerations. Gas has already proved the most economical fuel in an immense variety of industrial operations and in the big-scale heating of buildings. Even in cases where the fuel cost of an operation is higher with gas it is able to hold its own in open competition by reason of its advantages in precision and flexibility of control, resulting in the elimination of wasters, and in economies of space and labour costs. To make his case Mr. Higgs had merely to show a representative selection of the many successful uses of town gas in commerce and industry, and this he has done very effectively.

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Commentary by "Abaris"

Tolling the Bell

Gas publicity has since 1933, at any rate, been good enough to win applause from advertising experts and forceful enough to sell appliances almost like hot cakes, in spite of fierce competition with others. To-day gas is cramped, hemmed in, starved, cudgelled, and stifled by circumstances outside and inside the Industry, but the bell is rung, be it never so gently. It is a great pity that some engineers and managers are too busy to give this matter of publicity more thought; the day is sometimes not long enough for those who run many undertakings, so it is quite understandable. For those who spare a few minutes to read this page, I should like to crystallize several main points.

There are many ways of publicising: newspaper advertising, leaflets, exhibitions, displays, posters, films, booklets, lectures, editorials, and stunts of various kinds, but most of them cost money. Editorials may be had free of charge if you have a newsy story, but it is impossible to be didactic about the others; in use, I mean. None can say which is the best means without considering factors which include supplies, season, area, and speed, so to speak, of the operation. The ordinary yardstick is, how much does it cost, and how many people will it reach? Put these two together and you have a rough and ready guide; but what it really boils down to is that publicity should be left to him who knows. This accounts for advertizing agents.

We in the Industry do not see all the facts very clearly, nor do we see that new angle, because we know our product too well. We in the Industry take too much for granted; we use English and words that mean nothing to the husband and housewife, to the boy and girl.

The paramount need in our publicity to-day is editorial material for the women's journals and women's features; these can be inexpensive, if not free. But to go in for wholesale expenditure at the present time, on most of the means I have mentioned, would be folly. Let us allow the Ministry of Fuel and Power to spend the taxpayers' monies on telling the public how to turn a tap on and off; and how easy it is to enjoy sitting in a cold room, *sans* gas, *sans* coal, *sans* coke, *sans* everything. The doctors must be getting ready for the flood of patients with coryza!

Wooing a la Mode

How oddly young men and women can behave. While two young people are courting, they are very solicitous of each other; they bill and coo; they use baby talk; they wear their finest array. In short, they go through a period of self-deception and deceive each other the while. After the wedding ceremony comes the awful awakening in countless cases, and the baby talk is replaced by quarrels; a demoralizing dowdiness sets in, further to slay romance. This is pitiful, and believe me I am no cynic, but it does give me the chance to talk about Mr. Shinwell's sibilance to the Gas Industry maiden, when he visited Croydon the other day. The occasion was reported fully in these pages, and I hope all of it was carefully noted.

The technical and administrative staffs need have no fear of any denigration or worsening of their conditions after nationalization; the technicians in the Gas Industry, he assured the assembly, were doing a fine job for the country; in fact, the Gas Industry gave him

less trouble than the electricians, and he was grateful. Soft words, sweet words to the maiden who even now suspects that there is a villain behind the waistcoat that encloses the Shinwell heart.

He ended by saying that the Industry should be gathered into the fold . . . and that no more could be asked of the Government than generosity, fairness, and justice. Tennyson should be studied:

> ". . . . Ah why
> Should life all labour be ?
> Let us alone. Time driveth onwards fast
> And in a little while our lips are dumb.
> Let us alone."

Parliament is wooing too fast; and the technique will not bring the results that they even hope for.

Altruism

One of the electrical weeklies, in recent days, stated that ". . . legislation is simple compared with its administration." This was in connexion with words on the imminence of nationalization, and none will dispute this solemn fact. The writer went on: " Everyone engaged in the Electricity Supply Industry, whatever his views may be on the merits or demerits of nationalization, has firmly fixed in his mind the main objective, namely, the widest possible availability of electricity at the lowest price."

This makes me wonder; and who doesn't spend a lot of time a-pondering in these days ? To my mind, the main objective quoted above is a secondary one, and it is doubtful if a secondary can be a main objective in that context. Unless there is need for the perfectly widespread use of psychiatrists, the main objective in the electrical patient at this time is purely personal. He is asking himself: Where do I come in ? and: What am I going to get out of it ? Unless I am wrong; in which case all the psychiatrists can examine me.

Fiat Lux

Many in the Gas Industry still put some of their faith in gas lighting. It does not, however, require either a mantle or an Elijah to foretell that electricity with its lighting advantages will, sooner or later, dim all our mellow lights. Just as it has doused so many in the past. We are sentimental about gas lighting, which served its purpose in its adolescence and in its middle age. We can speak with pride of fishtail burners and Welsbach mantles; we may scorn that horrific electrical street lighting that makes the most beautiful damsel look like something out of an ageing tomb; and yet we see our contracts going one after the other, as the years plod by.

Hard-hearted borough surveyors have no soul for such historic things as gas mantles, nor for the wizened lamp-lighter who torches along o' nights, lighting and then ousting his brilliant clusters. Time marches on, and other more important things in industries are absorbing the gas; this fuel roars into immediate obedience in thousands of factories every day, and night; and it has no equal for many jobs.

The earthly little mantle crops up in Parliament with a frequency that proves that it is still very popular; but the reply always given to the question is the same, and says, in effect, that the Hon. Member is advised that everything possible is being done to increase the supply. . . . Yes, let us bid farewell to mantles and the tall gas lamps that stand so darkly forlorn to-day, by kind permission of the Minister of Fuel and Power.

Personal

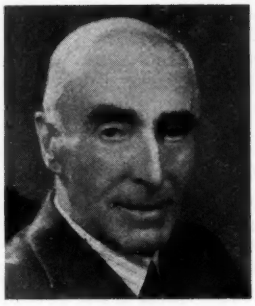
Dr. WILFRID FRANCIS, Consulting Fuel Technologist, has joined the Powell Duffryn Companies as Technical Consultant, with special reference to problems relating to fuel economy and the utilization of coal. His consulting practice will be merged into that of Powell Duffryn Technical Services, Ltd., with headquarters at 40, Lime Street, London, E.C.3.

* * *

Mr. RONALD L. TARRATT, Mechanical Engineering Assistant to the Chief Engineer of West's Gas Improvement Company, Ltd., has joined the staff of the Birmingham Gas Department as a Mechanical Engineer. Before joining West's Gas Improvement Company, on whose behalf he visited many European countries, erecting and inspecting plant of various descriptions, he was with the Wallsend Slipway and Engineering Company, for 18 months Fourth Engineer of the Blue Funnel motor vessel *Agammemnon*, and latterly Technical Assistant with Armstrong, Whitworth and Company.

* * *

The development of exhibition design " from aspidistra to Perspex " owes much in the Gas Industry to the pioneer work of Mr. W. H. BECKET, Exhibitions Organizer to the British Gas Council, who retires to-morrow (July 31) after 48 years' service in the Gas Industry. The greater part of this period was spent with the Gas Light and Coke Company, with which organization Mr. Becket's work was concerned not only with exhibitions, but with the modernization of the Company's showrooms. In 1945, by arrangement with the Company, he joined the British Gas Council, and in the two years since that date he has designed or assisted in the preparation of some 200 national and local exhibitions. Outstanding exhibitions at which Mr. Becket has been responsible for gas exhibits were the International Exhibitions



Mr. W. H. Becket

Mr. C. Warrenne

at Wembley in 1926 and at Glasgow in 1938. He also designed the Gas Industry's Kitchen Planning Exhibition at Dorland Hall in 1945. Mr. Becket's " swan song " is the Infra-red Heating by Gas Exhibition now running at Gas Industry House. Mr. Becket's successor as Exhibitions Organizer to the British Gas Council is Mr. C. WARRENNE, who is an expert on showroom design and exhibitions organization. After initial training as an architect, Mr. Warrenne spent 14 years as Chief Designer with a leading exhibition contracting organization, followed by 11 years designing and organizing exhibitions for the British Electrical Development Association. Mr. Warrenne has designed exhibits for British firms at a number of Continental exhibitions, and was responsible for the design of the annual exhibitions promoted by the Incorporated Municipal Electrical Association in 1937, 1938, 1939, and 1946. He is the author of a number of Papers on exhibition organization and showroom design and layout.

Obituary

Mr. FREDERICK RICHARD SMITH, who died on July 25 at the advanced age of 93, was a well-known figure in the Gas Industry of a past generation. He was the brother-in-law of the late Mr. W. C. Parkinson, who took him into his meter business in 1870 at the age of 16. His activities extended over 60 years until his retirement in 1932 from the directorates of the Parkinson & Cowan group of companies. Mr. Smith was not a technician, but it has been said of him that whatever business he had undertaken, it must have been a success. His genius lay in extracting the essentials of every problem that came before him, and of handling it with simplicity and the utmost promptness. Added to this were his many contacts at home and abroad and his lasting friendships. In the " JOURNAL " of Oct. 26, 1932, a more extended note of his activities was given, concluding with the remark that " it is impossible to dissociate Mr. Smith from activity while his faculties remain unimpaired." During the last years of his life, the loss of his sight deprived him of the use of other faculties which themselves remained unimpaired until the end, and thus his passing was a welcome relief to so active a man. No true picture of " F.R.S.," as he was known more intimately, would be complete without a reference to his private benefactions. He was not a wealthy man, but these, seemingly inexhaustible, were a wonder to his friends. Only a few days before his death he was enquiring about the welfare of the remaining old employees who were contemporary with him at the works in Cottage Lane, City Road. All these were regarded as his personal friends.

* * *

The holding company side of the Gas Industry has lost one of its leading personalities in the death of Mr. R. B. H. OTTLEY, which occurred on July 22 after a short illness at the early age of 56. Soon after demobilization after serving throughout the 1914-18 war in France, Egypt, and Mesopotamia, he joined the banking house of Erlangers, Ltd., in 1919, and began a remarkably successful career in the City. In 1934 he was appointed a Director of that Company, and his services were much sought by other companies. A year later, when the United Kingdom Gas Corporation was formed, he became its first Chairman. In 1938, on the retirement of Mr. S. J. Ingram from the Chairmanship of the South Western Gas and Water Corporation, Mr. Ottley became a Director and Chairman of that Corporation, and arrangements were concluded whereby the technical and commercial resources of the United Kingdom Gas Corporation were made available to the South Western Corporation in the management of its constituent Companies. He remained Chairman of both Corporations up to the time of his death, and he was also Chairman of the General Consolidated Trust and J. W. Green & Company Ltd., besides holding Directorships of a group of provincial gas companies

and a number of trusts and insurance houses. During the recent war he worked on the civilian staff of the Admiralty in addition to carrying on his commercial activities. Although seldom seen at Gas Industry gatherings, Mr. Ottley was one of the hardest workers in the Industry, and fitting tribute was paid to him at the annual meeting of the United Kingdom Gas Corporation, held on the day of his death.

Colonel **W. Moncrieff Carr**, O.B.E., T.D., Managing Director of the United Kingdom Gas Corporation, writes: The Gas Industry and the banking world are the poorer by the passing of Captain Bruce Ottley. He came into the Industry 12 years ago on the foundation of the United Kingdom Gas Corporation, of which Company he was Chairman. He later became Chairman of the South Western Gas Corporation, Ltd. He was a partner in the well-known banking house of Erlangers, Ltd., and a Director of several other companies. He was particularly devoted to his work in the building up and development of the gas corporation, the success of which was in no small measure due to his wise and constructive leadership. He never sought publicity but was an intense worker behind the scenes. He was above all a humanitarian and his kindliness and consideration and charm of manner endeared him to all who were privileged to work with him.

Letters to the Editor

Correct Procedure

DEAR SIR,—" Stickler's " notes on forms of address and the order of " letters after his name " will be useful to many whose duty it is to prepare announcements, programmes, lists of members of committee, &c. Speaking for an organization which handles a good deal of this sort of thing I am not sure that we quite agree with all his dicta. Our rule is that distinctions of honour emanating directly or indirectly from the Sovereign should come first. We agree that decorations for bravery come first of all and the order of these is admirably set out by " Stickler." We think, however, that a D.L. and/or a J.P. is to some extent a representative of the Sovereign and that these letters should follow decorations and orders of chivalry and in that order. Then would follow university degrees and finally membership of professional institutions. We do not think that the order of these should be decided by the date of the Royal Charter and we think that the Institution of Mechanical Engineers should follow the Senior Institution, the Civils, because of its undoubted seniority of foundation. So we should make the order in the example given as M.M., J.P., B.Sc., M.Inst.Gas E., Assoc.M.Inst.C.E., A.M.Inst.F.

It would be interesting to know, however, how many people agree with " Stickler's " opinion. Experts appear to differ considerably. For instance, one highly experienced Town Clerk insists on " The Right Honourable Winston Churchill, P.C.," though I should say the P.C. is superfluous being implicit in " The Right Honourable." Dr. Barash's problem is somewhat similar except that one would say the " Doctor " being implicit in the Ph.D. one would write Mr. Blank, Ph.D., and refer to him as Dr. Blank. Only a very determined stickler can say when you should write Mr. and when Esq. " Stickler " in his letter has handled the question very nicely, and I am sure he is perfectly correct. The latter has become so hackneyed that it has become impossible to discuss it without offending somebody. But it is interesting to note that a really highly qualified medical (or surgical) or scientific man will put " Mr. Blank " on his doorplate.

Yours faithfully,

July 22, 1947. " J.J.C.B.B."

DEAR SIR,—In reply to " Mr. Stickler's " interesting article and letter on " Correct Procedure," I cannot resist the chance to show him where he becomes " unstuck." With reference to the last paragraph of his reply to Dr. Barash, I would like to mention that members of the medical profession who are practising surgeons are known as " Mister " whether they are specialists or G.P.s. Likewise medical men who are physicians, specialists or otherwise, are known as doctors.

This applies, of course, within the profession; whereas to most laymen, all medical men are doctors. Which just goes to show, I hope, that even sticklers can occasionally become unstuck—or is it unstickled?

Yours faithfully,

F. LOWE.

21, Hatfield Road, Ramsgate.
July 24, 1947.

Diary

Sept. 8.—London and Counties Coke Association: Technical Committee, Gas Industry House, 2.30 p.m.

Sept. 9.—British Gas Council: Central Board, Gas Industry House, 2.30 p.m.

Sept. 11.—North British Association of Gas Managers: Annual General Meeting, Town Hall, St. Andrews. (Golf and bowling competitions, Sept. 10; annual excursion, Pitlochry, Sept. 12).

Sept. 12.—Manchester District Association of Gas Engineers: Visit to Stanton Ironworks, near Nottingham.

JUNIOR ASSOCIATIONS' ACTIVITIES

Activities of seven of the eight British Junior Gas Associations —the Eastern Association has only recently got under way—are recorded in the August issue of " GAS," published to-day. As usual the subjects discussed range over a wide and varied field, covering manufacture, distribution, utilization, and sales development, while records of a number of social engagements indicate a healthy and happy state of affairs throughout the Associations.

Reflections

A. G. Holtam (Cheltenham) devotes his Presidential Address to the Western Juniors to reflections on the past year, with special reference to the trend towards centralized direction, the rehabilitation of ex-Service fitters, co-operative instruction, and the installation of gas in new houses.

Birmingham Distribution System

Of interest to those on the distribution side is a Paper by A. G. Addison on " Mainlaying, Servicing, and Design of Distribution Systems " to the Midland Juniors, describing the main and service laying practice and the methods of reinforcement of pressures carried out by the Birmingham Gas Department. Methods of medium and high pressure distribution are detailed, together with low and high pressure services, and a description is given of the new high pressure holder station at Longbridge.

Business and Social

Scottish Juniors (Eastern District) went to Perth for their annual outing. Western Juniors combined their annual meeting with a visit to the works of the Cheltenham Gas Company. Manchester and Yorkshire Juniors revived their annual joint meeting with visits to the Warrington Gas Department and the works of Richmonds Gas Stove Co., Ltd. London Juniors had a very happy ladies' day at Portsmouth, inspecting the Hilsea works in the morning and, after lunching as the guests of the Portsmouth and Gosport Gas Company, taking a sea trip to Ryde in the afternoon.

Canteens in Industry

Industrial canteens represent an important branch of communal feeding and call for considerable planning and careful choice of appliances. How to proceed with an enquiry for a canteen installation is the theme of a Paper on " Canteens in Industry " by E. S. Carter, Distribution and Sales Superintendent of the Halifax Gas Department, to the Yorkshire Juniors. It is not always easy to persuade prospective consumers to allocate sufficient space for a proper lay-out, and the Author lays down certain minimum requirements for convenient working. He also gives some convincing statistics as to the comparative cost of alternative fuels.

Port Talbot Sales

The enthusiasm and enterprise of the Engineer and Manager of the Port Talbot Gas Department is obviously shared by his Sales Superintendent, T. E. Tyrrell, who in a Paper on " Future Aspects of Sales Development " to the Wales and Monmouthshire Juniors, shows that the undertaking has gone a long way to meet the threat of competition on the question of price. Even in a mining area where most consumers get their coal at a lower price than the general public the case for gas has been strengthened by a two-part tariff. Gas output has gone up in the last ten years from 220 million cu.ft. to 805 million cu.ft., and shows promise of further expansion. The Author makes some practical suggestions for promoting goodwill and describes the introduction of the punched card system for the better organization of sales and maintenance.

High Wycombe Developments

Steps towards the concentration of gas manufacture in two large stations and the closing down of smaller works are described by J. R. Owen in a Paper on " Recent Developments at the High Wycombe Works," presented on the occasion of a visit by the London Juniors. In ten years the output at High Wycombe has doubled; about half the total make is sold locally and the rest supplied to other parts of the Uxbridge, Maidenhead, Wycombe, and District Gas Company's area. It is the Company's policy to cease manufacture at the small Maidenhead, Marlow, and Amersham works as soon as possible, and to supply these areas from the Uxbridge and High Wycombe works, assisted by the Slough Gas and Coke Company, who will supply Maidenhead in bulk. The Paper includes details of the very satisfactory results obtained from the vertical retort installation which started making gas in November, 1944.

Ranalah Model II Gas Drying and Airing Cabinets have been specified for inclusion in the standard kitchen equipment of the Irthlingborough Estate now being erected by the East Midland Housing Association.

THE ORGANIZATION AND REGIONAL BOUNDARIES OF A NATIONALIZED GAS INDUSTRY

On Dec. 3, 1946, the Ministry of Fuel and Power requested the views of the British Gas Council on " the major questions of broad policy " regarding the " planning for the future organization of the Industry under the Government's proposals for nationalization. Such questions include the broad geographical lay-out of Regions, or other local organization, including the question whether the Regions suggested in the Heyworth Report or some alternative lay-out would be the most appropriate and efficient form of organization, the degree of de-centralization which might be desirable within the Regions, and the relationship between any Central Authority, if one is needed and the Regional or other Local Organization."

Accordingly, on Feb. 11, 1947, a preliminary draft of " Notes on the Organization of a Nationalized Gas Industry " was communicated to the Ministry by the Executive Committee, but its detailed discussion was postponed by the Ministry owing to the fuel crisis. Nevertheless consideration was given by the Executive Committee to the amplification of the Notes and a Survey was undertaken to determine the geographical areas appropriate to an integrated Gas Industry. As a result " Further Notes on the Organization and Regional Boundaries of a Nationalized Gas Industry " were approved by the Central Board on June 10, for communication to the Ministry, in response to its request, as representing the tentative views of the Council and without prejudice to its opposition to nationalization, for the accomplishment of which the Council was not to be regarded as having submitted a Plan.

The following is abstracted from the Memoranda.

It is proposed that a Central Gas Board should be established. This should take the place of the Central Board of the British Gas Council. Regional Boards should be established and they should take the place of the District Boards of the British Gas Council. The Central Board and the Regional Boards should each consist of a Chairman and, say, six members. These Boards would presumably be nominated by the Minister, but it is strongly recommended that they should be mainly, if not wholly, composed of men skilled and experienced in the affairs of the Gas Industry, both administratively and technically.

The powers vested in the Central Board and the Regional Boards need detailed consideration, but it is important that decentralization should be practised as far as possible and that a large measure of autonomy should be given to each of the Regional Boards. The Central Board should, as one of its early duties, call upon each Regional Board to submit plans for dividing its Region into smaller groups of undertakings—each group being controlled by a District Management Group, which it is essential should consist wholly of persons well qualified and experienced in controlling gas undertakings The plans of each Region would be subject to the approval of the Central Board.

The Central Board should be given authority to decide the policy to be carried out by the Regional Boards, which would in a similar manner control the District Management Groups, subject always to the overriding principle that, so far as possible, decentralization should be practised.

In addition to performing whatever functions may be entrusted to it in re-organizing and controlling the Gas Industry, the Central Board should also be responsible for carrying on, so far as may be considered advisable and necessary, the functions of the Central Organization of the British Gas Council, the Federation of Gas Employers, and the National Federation of Gas Coke Associations. In the same way, the Regional Boards would perform the functions of the District Boards of the British Gas Council and the Federation of Gas Employers and of the District Coke Associations. This could be done by various members of the Central Board being responsible for looking after the various interests now served by these organizations. Thus, one member of the Board would be responsible for dealing with marketing; he would be interested in those matters at present the concern of the Development and Publicity Committees of the British Gas Council and the marketing of coke by the National Federation of Gas Coke Associations.

On each Regional Board would be a member charged with a similar responsibility. The member on the Regional Board would form within his Region, appropriate Committees, of which he would be Chairman, while the member responsible on the Central Board would form a Central Committee on which each Region would be represented.

In like manner, the Federation of Gas Employers would be replaced by one member of the Central Board who would be responsible for the negotiation of wages and conditions of service with the appropriate Trade Unions, liaison being established between him and the Regional Boards through persons having similar responsibilities on the Regional Boards.

The Gas Research Board carries out co-operative research and is financed by the Gas Supply Industry, by appliance makers and contractors and by the Department of Scientific and Industrial Research. It is controlled by a Council composed of representatives of the Gas Supply Industry nominated by the Institution of Gas Engineers, representatives of appliance makers and contractors nominated by the Society of British Gas Industries and representatives of the Department of Scientific and Industrial Research. Consideration would need to be given to the representation on the Gas Research Board of the Central Board, which would mainly finance the Gas Research Board.

The Institution of Gas Engineers as a professional organization must be free to continue as an entirely independent and professional body.

Organization

A Panel of seven members of the Executive Committee of the British Gas Council was appointed to meet the Ministry, viz.: Colonel H. C. Smith, Colonel W. M. Carr, Mr. E. Crowther, Dr. E. V. Evans, Mr. D. Fulton (alternate, Mr. G. E. Currier), Mr. A. W. Lee, and Mr. S. E. Whitehead. This Panel met representatives of the Ministry on Feb. 11, when the first memorandum was presented. The Executive Committee has continued its consideration of the first memorandum and, as a result, has prepared the second, " Further Notes on the Organization and Regional Boundaries of a Nationalized Gas Industry." These memoranda were approved by the Central Board on June 10. They cover the broad geographical lay-out of the Regions, irrespective of the economic considerations involved by nationalization; they are made in view of the Government's declared intention to nationalize the Gas Industry during the life of the present Parliament; their purpose is emphasized, for they must be taken only to apply to a Nationalized Gas Industry; and they are not to be considered, in any sense, a British Gas Council plan for nationalizing the Gas Industry.

The regional boundaries have been designed in such a way as to avoid the partition of existing undertakings. It is considered very desirable, in order to ensure a smooth transition to national ownership, that no changes be made in the initial stages which will affect the day to day working of the existing undertakings. Consequently, division of present supply systems and service organizations is considered injudicious in the early stages of development. Such a course would necessarily involve the transfer of consumers from one undertaking to another, with consequent alteration in working arrangements and possibly adjustments to distribution and production. Certain adjustments may well be considered advisable after the Regional Boards have had an opportunity of considering the problems which arise in their Regions, but these should be arranged after examination of the relevant evidence in each case, following upon detailed survey.

It is important to remember that the Industry as at present constituted consists not of one corporate body but of a large number of separate units. It is these separate units which collectively, physically unaltered, will constitute the National Gas Industry on the " Appointed Day."

It is the view of the British Gas Council that no form of amalgamation under nationalization will be effective which ignores the importance of the local unit. From the standpoint of the public the Industry is a retailing industry, dealing individually with over 11 million consumers, and as such it would not respond to centralized Regional operational control. For the purpose of maintaining an efficient district supply, operational units of less than Regional size are required.

The organization, as indicated, is visualized as a " three-decker " structure. At the top there would be the National Board, concerned with finance, broad policy planning and other affairs which require handling at a national level. Under the National Board would be 11 Regional Boards for England and one each for Scotland and Wales. The 13 Regional Boards would be responsible for policy, planning, and co-ordination at regional level. Acting under the Regional Boards it is strongly recommended that there should be District Management Groups which would be operational. These District Management Groups would be responsible for one or more undertakings, as decided by the Regional Board, and dependent upon the size of the undertakings, their geographical position and other factors. It is again strongly recommended that so far as the National and Regional Boards are concerned, they should be mainly, if not wholly, composed of men skilled and experienced in the affairs of the Gas Industry, both administratively and technically. With regard to the District Management Groups, it is considered essential that they should consist wholly of persons well qualified and experienced in operating gas undertakings.

Regional Boundaries

BASIS OF GROUPING

It is felt that none of the existing or hitherto proposed territorial groupings—for example, the Regions of the Heyworth Report, the Districts of the British Gas Council, the Civil Defence Regions, or the Areas proposed in the Electricity Bill—conform completely with the requirements. It is necessary to start afresh, surveying the size of the existing undertakings and the distribution of population.

If the problem is approached from the point of view of technical development it is found that the likelihood of a national grid becoming a matter of practical policy is remote. On the other hand transmission developments of recent years, not only in urban areas but also in country districts, suggest that considerable progress is possible in the laying out of local grids from areas where production is cheap.

Regions

1. Northern Region

Consideration was given to the different areas of the country at first on a geographical basis, since certain territories stand out as complete units having their own problems, and being divided naturally from adjacent territories by the nature of the intervening country.

The first of these self-contained units of territory is the North East Coast industrial area, extended to the adjacent rural areas. This is bounded by the Cleveland Hills, the North York Moors, the Pennines, and the Cheviots. There is, however, another isolated territory lying to the west—namely, the Cumberland and North Westmorland area, which is separated from the North East Coast by the Pennines, and from Lancashire by the Cumbrian Mountains. This area is too small to be considered as an independent Region from the point of view of gas supply. The major part of the demand for gas is concentrated in the Carlisle-Workington area. The line of communication between Carlisle and Newcastle by way of Haltwhistle is somewhat shorter and easier than the line of communication between Carlisle and Preston by way of Shap, and this consideration suggests the association of the North East Coast and the Carlisle-Workington areas in one Northern Region, embracing the whole of the counties of Northumberland and Durham, and those parts of Cumberland and Westmorland lying to the north of the Main Cumbrian Range, together with that part of the North Riding of Yorkshire lying to the north of an imaginary line drawn from the Cleveland Hills to Great Whernside in the Pennine Range.

Eighty per cent. of the population is concentrated into an area of some 590 square miles, the great majority in the Tyne, Wear, and Tees industrial areas. An industrial area on a smaller scale is found in Carlisle and Workington; otherwise the territory is for the most part rural, and much of it is mountainous. Coke oven gas supplies have been largely developed on the North East Coast, where the undertakings are of considerable size. At Workington coke oven gas is also used. In the rural districts the undertakings are for the most part small and isolated.

Yorkshire and the North Midlands

From Skipton and Harrogate in the West Riding of Yorkshire there extends southwards a continuous belt of high demand for gas as far as Chesterfield in Nottinghamshire, and in planning for future development this territory must be associated with the eastern and more rural part of the West Riding and with the East Riding, the southern part of the North Riding and with much of Lincolnshire. It appeared also that the whole of Nottinghamshire south of Chesterfield, the greater part of Derbyshire and also central and east Leicestershire, with which is associated Rutland, has much in common with this territory, and that the whole area defined above must be considered as a single geographical entity, in which the use of coke oven gas is an important factor throughout much of the area. So large a unit, however, is considered to be too large to form a single Region for the purposes of the Gas Industry.

Upon detailed consideration there is found to be a natural line of division between the southern and the northern parts of the area; to the east the Humber; to the west what may perhaps be described, for lack of a better term, as a "coke oven gas watershed"; for it so happens that from Barnsley southwards the development of coke oven gas transmission mains has been in southerly direction, while north of Barnsley, from Hemsworth, the coke oven gas transmission mains run northwards.

2. North Eastern Region

It is proposed that the northern part form the North Eastern Region, bounded on the west by the Pennines, on the north by the North York Moors and the Cleveland Hills, and on the south by the Humber and by the present southern boundaries of the statutory areas of the Huddersfield, Royston and Brodsworth, and Hemsworth gas undertakings. This Region covers the central and northern industrial areas of the West Riding, and eastern and north eastern rural areas of the same county, the whole of the East Riding and the southern part of the North Riding. For geographical reasons the north western part of the West Riding, lying to the west of the main Pennine Range, is excluded.

3. North Midland Region

The Southern part of this territory—namely, South Yorkshire, Nottinghamshire, Lincolnshire, Rutland, and the greater part of both Derbyshire and Leicestershire—becomes the North Midland Region.

The boundary of this Region in the north is the Humber and the southern boundary of the North Eastern Region as already defined; the boundary to the west, the southern part of the Pennine Range, the south western boundary of Derbyshire, and an imaginary line drawn through Leicestershire from Ashby-de-la-Zouch to Lutterworth; the boundary to the south follows the southern boundaries of Leicestershire, Rutland, and Lincolnshire.

Industrial demand is considerable, being concentrated to a large degree along the line of the South Yorkshire and Nottinghamshire coalfield and in Leicester and certain towns elsewhere. The principal agricultural areas lie to the east. On average the density of population in the Rural District is high. Coke oven gas supplies have been developed to a very great degree in South Yorkshire, Nottinghamshire, and Derbyshire, the Sheffield grid being outstanding in this connexion.

Eastern and South Eastern Counties

In considering the Eastern and South Eastern counties the focal point is necessarily London, for future development must take into account the extension of bulk supplies outwards from that centre, which has for long been a natural trend. In planning the Regions the conception of the London "sphere of influence" was broadly that it covered the country lying to the east of an imaginary line drawn from the Wash to Southampton, though in the west of that territory there were the conflicting claims of association of Oxford with Swindon and the western undertakings as far as the Severn estuary. In view of this the area considered with London was restricted to the whole of East Anglia, Northamptonshire (which is divided from the Midlands by a belt of low population on its north western boundaries), Bedfordshire Hertfordshire, Middlesex, south Buckinghamshire, east Berkshire, Kent, Surrey, and Sussex, the whole comprising a unit of territory to a great extent independent of adjacent areas. This was examined from the point of view of division into Regions, stress being laid upon the importance of providing for inter-Regional development both within this area, and also with adjacent Regions subsequently to be defined.

Three Regions are recommended here. These are as follows:

4. Eastern Region.

The Eastern Region comprises the northern and eastern parts of the area defined above, and includes the counties of Northamptonshire, Cambridgeshire, Huntingdonshire, Norfolk, and Suffolk; the northern part of Bedfordshire, and the eastern, central, and northern parts of Essex. It is designed to cover all those areas to the north and east

of London not at present closely concerned in the development of Greater London.

In this Region 44% of the population lives in Rural Districts covering 91% of the area. There is less industrial development in this Region than in any other, and the problem of expansion will be correspondingly difficult. Only four County Boroughs are included, Ipswich, Northampton, Norwich, and Great Yarmouth, and the only industrial area is that around Northampton, Kettering, Wellingborough, and Bedford.

5. North London Region

In dealing with Greater London, there is a case for considering it as a single unit forming one Region. On the other hand, a Region covering all London with its suburbs would necessarily be extremely large in number of consumers; it is felt, moreover, that to obtain the most efficient development provision must be made for expanding outwards as the population moves away from the centre, thus following the hitherto accepted policy of the Industry in London, which has proved very effective in practice during the present century. Consequently after considering alternative possibilities, it is recommended that the River Thames be accepted in principle as the dividing line between North and South London (subject to following the present statutory boundaries of the London undertakings until such time as adjustments can properly be made by inter-Regional agreement) and that a North London Region be formed to cover the northern part of the County of London, the whole of Middlesex, the greater part of Hertfordshire, the south of Bedfordshire, parts of Buckinghamshire and Berkshire, the west and south of Essex, and such small areas in Surrey as are at present served by the undertakings in Greater London north of the River Thames.

Due to the definition of this Region to include only the area of Greater London north of the Thames, and the areas immediately adjacent, the concentration of population is outstanding, and conditions of supply differ from those in any other Region for this reason. Both the domestic, and the commercial and industrial loads, are very large. In this Region the integration of the Industry through amalgamation has already resulted in the development of undertakings of exceptional size and in the closing of many small works, one of the most important factors in production being the facilities for receiving coal by sea-going colliers at the Thames-side works. The largest single distribution system in the country, that of the Gas Light and Coke Company, extending to well over 6,000 miles of main, is in this Region. The 1944 figures for consumers and gas available are depressed by the loss of population due to wartime evacuation and the flying bomb attacks.

6. South Eastern Region

London south of the Thames is smaller in extent and in population than London north of the Thames, and it is considered impracticable to form a South London Region, since this would leave the southern part of Surrey, the eastern and southern parts of Kent, and the greater part of the county of Sussex, as an isolated area insufficient in itself to form a separate Region. Consequently it is proposed that South London, Kent, and most of Surrey and Sussex be included in a single South Eastern Region.

Southern, South Western, and South Midland Counties

The undertakings in Hampshire, Oxfordshire, mid-Buckinghamshire, and the greater part of Berkshire have been considered in relation both to the London area and in relation to the west of England, and it was felt that properly they should be taken with the latter, three Regions being recommended, embracing broadly the Southern counties, the South Western counties, and the South Midland counties. Provision for inter-Regional development is necessary between these three Regions, and also with the adjacent Regions. Attention has been paid to the present-day association of undertakings, which is an important factor in these areas.

7. Southern Region

The first of these three Regions is the Southern Region, embracing Hampshire, the greater part of Dorset, and parts of Wiltshire and Berkshire and of adjacent counties. It includes on the coast Bournemouth, Portsmouth, and Southampton, and inland extends to Aldershot, Reading, and Salisbury.

The coastal area, from Weymouth to Bognor, has a high demand for gas; industrial development is found in Reading, Portsmouth, and Southampton, and around Aldershot considerable military requirements are concentrated. The Isle of Wight is included in this Region.

8. South Western Region

Cornwall, Devon, and Somerset, western Dorset, and the south western part of Wiltshire, together with the city of Bristol and the immediately adjacent parts of Gloucestershire, become the South Western Region.

The Region includes four County Boroughs, Bath, Bristol, Exeter, and Plymouth, and a very large number of municipal boroughs and urban districts scattered throughout its extensive area. Due no doubt to the nature of the country very little amalgamation has taken place between the gas undertakings, though the rural development by local grids in certain areas, particularly Bath, requires mention. The number of separate undertakings is very high, and although grouping under common ownership has taken place to some extent, little physical unification of supply areas has followed. Industrial development is largely confined to the larger cities and towns, but there is a possibility of future expansion of the Somerset coalfield. The residential and summer loads of many seaside towns are valuable. The density of population is on average low, and there are certain areas, notably Exmoor, Dartmoor, and Bodmin Moor, where the population is negligible.

9. South Midland Region

The South Midland Region extends eastwards from the Welsh Border, including Herefordshire, south Worcestershire, the greater part of Gloucestershire, north west Wiltshire, the greater part of Oxfordshire, north and west Berkshire and mid-Buckinghamshire, with small areas in other adjacent counties.

The gas supply is to a large extent in the hands of four groups of undertakings, namely, that based on Cheltenham and Gloucester, that based on Swindon, that based on Oxford, and that based on Aylesbury. The territory is largely rural, including only Hereford and Stroud in addition to the large towns already mentioned. Rural gas distribution by mains radiating outwards from the urban works is a feature of the area.

10. Midland Region

Birmingham and the adjacent industrial areas form the centre of a territory properly to be considered as a single Midland Region. To the north it embraces the whole of Staffordshire, to the east, the western part of Leicestershire; to the west, Shropshire, and to the south, Warwickshire and the northern part of Worcestershire.

11. North Western Region

The territory properly associated with the Lancashire industrial area is to a great extent determined on geographical considerations. To the north the Cumbrian Mountains, to the east the Pennines, to the south west the Welsh Border, confine the area. To the south east the Cheshire-Staffordshire boundary, separating the Potteries from the salt-producing area of Cheshire, is taken as the line of demarcation. The area extends from the Lake District to South Cheshire and from the north western part of the West Riding of Yorkshire to the Peak District, and amounts to 3,900 square miles, including a population which before the war totalled nearly six and a half million. The greater part of the population is contained in the industrial area extending from North Cheshire to Burnley and Preston. The whole of this area, from the southern part of Westmorland to the southern part of Cheshire, and including the Buxton area in Derbyshire, forms the North Western Region.

12. Wales and Monmouthshire Region

One Region is recommended for Wales and Monmouthshire. Consideration was given initially to the question of dividing the country mid-way, and associating South Wales with Gloucestershire, North Wales with Cheshire, but this ran counter to the feeling in Wales itself that the resources of the country as a whole can best be developed when it is taken as a single unit, developments common to Wales and England being considered on an inter-Regional basis.

13. Scottish Region

Scotland presents certain problems that differ from those found in England, and it has not been thought desirable to apply the same principles in allocating the territory under a Regional scheme. Firstly due regard must be paid to the fact that the Legal and Administrative system in Scotland is distinct from that of England; thus it is found necessary to take the Border as the Regional boundary, and to make provision for the Industry in Scotland to be kept closely in touch with Scottish affairs in Edinburgh. For this reason, even if it had been thought desirable on geographical grounds, the question of uniting parts of Scotland and England in a single Region has been rejected. Secondly, although the case for splitting the country into two Regions has been considered, the recommendation made here is for the setting up of one Scottish Region. Although this Region will cover nearly 30,000 square miles, it is represented that Scottish opinion is to a large extent in favour of a single Region, and the fact that of the total population of some 4,850,000 approximately 70% (3,397,000) live in the industrial belt, some 4,000 square miles in extent, is considered to justify this view. A great degree of decentralization of administration will be necessary, but clearly the system must be designed to meet the circumstances of the case.

Conclusion

The Regions outlined cover the whole country, and it is felt that statutory powers should be given to the Nationalized Industry to extend the supply throughout any area. The statistics given and the brief description of the Regions indicate the varied circumstances which have to be met, making flexibility of internal organization essential.

A summary of the principal statistics for the Regions is given below, and in this they are listed in the order of the total quantity of gas

available in 1944. The flying bomb attacks of that year on London and South Eastern England affected the figures for the North London and South Eastern Regions; it seemed correct, however, to use the 1944 figures in this Report, since these are the latest available from official publications. Pre-war figures are no longer considered appropriate, as the present demand for gas is as much at variance with these as with the war-time figures. Pre-war figures are, however, necessarily used for population. Statutory and non-statutory undertakings are included throughout.

The summary of the Regional statistics is as follows:

Region	Mill. cu.ft. of gas available (1944)	Coke oven gas included (%)	Thousand consumers (1944)	No. of undertakings	Square miles	Pre-war population (thousands)
5. N. London	69,201	1	2,059	27	2,200	6,916
11. N. Western	57,380	2	1,669	107	3,900	6,406
10. Midland	47,358	5	959	64	4,000	3,792
13. Scottish	40,104	7	1,140	198	29,850	4,852
6. S. Eastern	39,984	—	1,295	61	3,400	4,853
3. N. Midland	39,575	56	888	87	5,700	3,679
2. N. Eastern	23,196	14	803	79	4,000	2,967
1. Northern	22,496	58	607	55	5,900	2,793
8. S. Western	18,174	—	463	102	6,500	2,216
7. Southern	16,554	—	415	33	3,550	1,774
12. Wales and Mon.	12,301	27	384	106	7,800	2,601
4. Eastern	11,835	3	352	87	6,800	1,932
9. S. Midland	9,023	—	104	56	4,100	1,021
Total ...	407,681	12	11,288	1,062	87,700	45,802

Sources used in the compilation of statistics given here are the Ministry of Fuel and Power Return for the Gas Industry for the years 1938-1944 so far as concerns the gas supply figures, and standard reference books on Local Government for the figures of population and area. Data collected in the preparation of the "Report on a Survey of the Gas Industry in Great Britain" of 1943 have been extensively employed, and reference has been made to the "Report on the Planning of the Gas Industry" of the British Gas Federation of 1943 and to the memoranda and reports on Nationalization of the British Gas Council.

The Central Board wishes to acknowledge the valuable work done by Mr. Stirling Everard in connexion with the definition of the Regional boundaries.

Undertakings in Each Region

1. NORTHERN REGION

Alnwick
Alston
Amble
Annfield Plain
Appleby
Aspatria
Barnard Castle
Bedale
Berwick
Bishop Auckland
Blyth
Brampton
Brancepeth
Brotton
Carlisle
Cleveland
Cockermouth
Corbridge
Crook
Darlington
Durham
Ennerdale
Gainford
Guisborough
Haltwhistle
Handen Hold
Hartlepool
Hexham
Houghton-le-Spring
Keswick
Kirkby Stephen
Maryport
Masham
Middlesbrough
Newbiggin-by-the-Sea
Newcastle-upon-Tyne
Northallerton
Penrith
Redcar
Richmond
Rothbury
St. Bees
Shotley Bridge
Silloth
South Bank
Spennymoor
Stanhope
Stanley
Stockton-on-Tees
Sunderland
Tudhoe
Whitehaven
Wigton
Wooler
Workington

2. NORTH EASTERN REGION

Ackworth, Featherstone
Barnoldswick
Batley
Beverley
Bingley
Bradford
Bridlington
Brighouse
Brough
Calverley
Castleford
Colne Valley
Cudworth
Denby Dale
Dewsbury
Driffield
Earby
Easingwold
East Hull
Elland
Filey
Garforth
Goole
Halifax
Harrogate
Hebden Royd
Helmsley
Hemsworth
Hessle
Holderness
Hornsea
Howden
Huddersfield
Hull
Ilkley
Keighley
Kildwick
Kippax
Kirbymoorside
Kirkburton
Knottingley
Leeds
Malton
Market Weighton
Meltham
Methley
Mirfield
Morley
Normanton
Nortenthorpe
Ossett
Otley
Pickering
Pocklington
Pontefract
Pudsey
Queensbury
Rawcliffe
Ripon
Robin Hood's Bay
Rothwell (Yorks)
Royston (Yorks)
Scarborough
Selby
Shepley
Sherburn
Shipley
Silsden
Skelmanthorpe
Skipton
Sowerby
Spenborough
Thirsk
Todmorden
Wakefield
West Yorks Gas Distribution Co.
Whitby
Yeadon
York

3. NORTH MIDLAND REGION

Alford
Alfreton
Ambergate
Ashbourne
Ashby-de-la-Zouch
Barrow-on-Humber
Barton
Bingham
Ibstock
Ilkeston
Kegworth
Kibworth
Kirkby-in-Ashfield
Kirton
Kirton-in-Lindsey
Leicester
Lincoln
Long Eaton
Long Sutton
Loughborough
Louth
Lutterworth
Mablethorpe
Mansfield
Market Deeping
Market Harborough
Market Rasen
Measham
Melbourne
Melton Mowbray
Middleton-by-Wirksworth
Misterton
Newark
Nottingham
Oakham
Penistone
Rawmarsh
Riddings
Ripley
Rotherham
Scunthorpe
Sheffield
Shepshed
Shirebrook
Shirland
Sileby
Skegness
Sleaford
South Normanton
Southwell
South Yorks and Derbyshire
Spalding
Spilsby
Stamford
Stocksbridge
Sutton-in-Ashfield
Swinton
Uppingham
Wath
Winterton
Wirksworth
Wombwell
Woodhall Spa
Worksop
Worsbrough Dale
Bolsover
Boston
Bottesford
Bourne
Brigg
Caistor
Chesterfield
Clay Cross
Cleethorpes
Clowne
Denaby
Derby
Doncaster
East Retford
Epworth
Gainsborough
Grantham
Great Grimsby
Great Wigston
Hathersage
Heckington
Horncastle

4. EASTERN REGION

Aldeburgh
Aspley Guise
Attleborough
Aylsham
Beccles
Bedford
Braintree
Brandon
Brightlingsea
Bungay
Burnham
Bury St. Edmunds
Cambridge
Chatteris
Chelmsford
Clacton
Colchester
Cromer
Daventry
Desborough
Diss
Downham Market
Dunmow
Earls Colne
East Dereham
Ely
Fakenham
Finedon
Framlingham
Frinton
Gorleston
Great Yarmouth
Hadleigh
Halesworth
Halstead
Harleston
Harwich
Haverhill
Huntingdom
Ipswich
Kelvedon
Kettering
King's Lynn
Leiston
Littleport
Loddon
Lowestoft
Maldon
Manningtree
March
Mildenhall
Mundesley
Needham Market
New Hunstanton
Newmarket
Northampton
North Walsham
Norwich
Oundle
Peterborough
Ramsey
Rothwell (Northants)
Rushden
Saffron Walden
St. Ives (Hunts)
St. Neots
Saxmundham
Sheringham
Soham
Southminster
Southwold
Stony Stratford
Stowmarket
Sudbury
Swaffham
Thetford
Thrapston
Watton
Wellingborough
Wells-next-the-Sea
Whittlesey
Wickham Market
Wisbech
Witham
Woburn
Wolverton
Wyvenhoe

5. NORTH LONDON REGION

Ascot
Baldock
Barnet
Berkhampstead
Bishop's Stortford
Chertsey
Chesham
Commercial
Dunstable
Gas Light & Coke
Hornsey
Lea Bridge
Letchworth
Luton
Markyate
North Middlesex
Potton
Romford
Royston (Herts)
St. Margarets
Sandy
Shoeburyness
Slough
Tottenham
Uxbridge
Watford
Windsor

6. SOUTH EASTERN REGION

Arundel
Ashford
Ash-next-Sandwich
Bexhill
Billingshurst
Brighton
Broadstairs
Burgess Hill
Canterbury
Charing
Cranbrook
Croydon
Deal
Dover
Eastbourne
East Grinstead
East Kent
East Surrey
Edenbridge
Faversham
Folkestone
Godalming
Gravesend
Guildford
Hampton Court
Hassocks
Hastings
Hawkhurst
Hayward's Heath
Heathfield
Herne Bay
Horley
Horsham
Lewes
Maidstone
Mid-Kent
Newhaven
New Romney
Petworth
Ramsgate
Rochester
Rye
Sandwich
Sheppy
Sittingbourne (Company
Sittingbourne (U.D.C.)
South Metropolitan
South Suburban
Steyning
Storrington
Tenterden
Thanet
Tunbridge Wells
Uckfield
Wadhurst
Wandsworth
Wateringbury
Westerham
Westgate
Whitstable
Woking

7. SOUTHERN REGION

Alresford
Andover
Basingstoke
Blandford
Bognor
Bournemouth
Cowes
Dorchester
East Cowes
East Wight
Farnham
Freshwater
Haslemere
Kingsclere
Midhurst
Mid-Southern
Newbury
Newport (I.O.W.)
Petersfield & Selsey
Portland
Portsmouth
Reading
Romsey
Ryde
Salisbury
Shaftesbury
Southampton
Sturminster
Swanage
Titchfield
Weymouth
Whitchurch (Hants)
Yorktown

8. SOUTH WESTERN REGION

Ashburton
Barnstaple
Bath
Bideford
Bodmin
Bradford-on-Avon
Bridgwater
Bridport
Bristol
Brixham
Bruton
Buckfastleigh
Fowey
Glastonbury
Gunnislake
Hayle
Helston
Honiton
Ilfracombe
Ivybridge
Kingsbridge
Langport
Launceston
Liskeard
Redruth
St. Austell
St. Blazey
St. Ives (Cornwall)
St. Just
Salcombe
Saltash
Seaton
Shepton Mallet
Sherborne
Sidmouth
Somerton

Bude
Budleigh Salterton
Callington
Camborne
Castle Cary
Chagford
Chard
Chew Magna
Chipping Sodbury
Chudleigh
Clevedon
Colyton
Crediton
Crewkerne
Cullompton
Dartmouth
Dawlish
Devizes
Downside
Exeter
Exmouth
Falmouth
Looe
Lostwithiel
Lyme Regis
Malmesbury
Martock
Mere
Midsomer Norton
Milborne Port
Minehead
Moretonhampstead
Newquay (Cornwall)
Newton Abbot
North Tawton
Oakhill
Okehampton
Padstow
Penryn
Penzance
Plymouth (Company)
Plymouth (Corporation)
Portishead
Radstock
South Brent
South Molton
Taunton
Tavistock
Teignmouth
Thornbury
Tiverton
Torpoint
Torquay
Trowbridge
Truro
Uffculme
Wadebridge
Warminster
Watchet
Wedmore
Wellington (Somerset)
Wells
Westbury
Weston-super-Mare
Wincanton
Yeovil

9. SOUTH MIDLAND REGION

Aylesbury
Bampton
Banbury
Berkeley
Bidford-on-Avon
Bourton-on-the-Water
Brackley
Bromyard
Campden
Cheltenham
Chipping Norton
Cinderford
Cirencester
Coleford
Colwall
Dursley
Evesham
Eynsham
Fairford
Faringdon
Fenny Stratford
Gloucester
Goring
Hereford
Highworth
Hungerford
Kington
Lambourn
Ledbury
Leighton Buzzard
Leominster
Lydney
Lydney
Marlborough
Malvern
Mitcheldean
Newent
Newnham
Oxford
Princes Risborough
Ross
Sharpness
Shipston-on-Stour
Stow-on-Wold
Stroud
Swindon
Thame
Tring
Upton-upon-Severn
United District
Wallingford
Wantage
Winslow
Witney
Woodstock
Wootton Bassett
Wotton-under-Edge

10. MIDLAND REGION

Albrighton
Alcester
Atherstone
Bewdley
Bilston
Birmingham
Bridgnorth
Bromsgrove
Burton-on-Trent
Cannock
Chasetown
Cheadle
Church Stretton
Coventry
Cradley Heath
Dudley
Ellesmere (Salop)
Halesowen
Henley-in-Arden
Hinckley
Ironbridge
Kidderminster
Kidsgrove
Kineton
Leamington Priors
Leek
Lichfield
Ludlow
Market Drayton
Newcastle-under-Lyme
Newport (Salop)
Nuneaton
Oldbury
Oswestry
Redditch
Rowley Regis
Rugby
Rugeley
Sedgley
Shifnal
Shrewsbury
Smethwick
Solihull
Stafford
Stoke-on-Trent
Stone
Stourbridge
Stourport
Stratford-on-Avon
Swadlincote
Tamworth
Tenbury
Tipton
Uttoxeter
Walsall
Warwick
Wellington (Salop)
Wem
West Bromwich
West Staffordshire
Whitchurch (Salop)
Willenhall
Wolverhampton
Worcester

11. NORTH WESTERN REGION

Accrington
Altrincham
Ashton
Ashton-in-Makerfield
Atherton
Barrow-in-Furness
Bentham
Birkenhead
Blackburn
Blackpool
Bollington
Bolton
Broadbottom
Burnley
Bury
Buxton
Carnforth
Chapel
Chester
Chorley
Clitheroe
Colne
Congleton
Crewe
Dalton-in-Furness
Darwen
Ellesmere Port
Fleetwood
Garstang
Glossop
Golborne
Grange
Haslingden
Hayfield
Hellifield
Heywood
Hindley
Hollingworth
Hoylake
Ingeton
Kendal
Kirkby Lonsdale
Kirkham
Knutsford
Lakes
Lancaster
Leigh
Leyland
Littleborough
Liverpool
Longridge
Lymm
Lytham St. Annes
Macclesfield
Malpas
Manchester
Marple
Middleton
Middlewich
Millom
Milnthorpe
Morecambe
Mossley
Nantwich
Nelson
New Mills
Newton-le-Willows
North Cheshire
Northwich
Oldham
Ormskirk
Oswaldtwistle
Padiham
Poulton-le-Fylde
Prescot
Preston
Radcliffe
Ramsbottom
Rochdale
Rossendale
Runcorn
St. Helens
Sandbach
Salford
Seascale
Sedbergh
Settle
Settle (Hector Christie)
Skelmersdale
Southport
Stalybridge
Stockport
Stretford
Thornton Cleveleys
Tideswell
Tyldesley
Ulverston
Wallasey
Warrington
Westhoughton
Widnes
Wigan
Wilmslow
Windermere
Winsford
Withnell
Worsley

12. WALES AND MONMOUTHSHIRE REGION

Abercarn
Aberdare
Abergavenny
Abertillery
Aberystwyth
Ammanford
Bala
Bangor
Barmouth
Festiniog
Garw
Glyncorrwg
Gowerton
Haverfordwest
Hawarden
Hay
Holyhead
Holywell
Nantlle Vale
Neath
Newport (Mon.)
Newtown
Neyland
Pembroke
Penmaenmawr
Pontardulais
Pontypool
Barry
Beaufort
Bedwellty
Bethesda
Brecon
Bridgend
Brynmawr
Buckley
Builth
Caernarvon
Caldicot
Cardiff
Cardigan
Carmarthen
Cefn Mawr
Chepstow
Colwyn Bay
Connah's Quay
Conway
Corwen
Cowbridge
Crickhowell
Denbigh
Dolgelley
Dowlais
East Anglesey
Ebbw Vale
Kidwelly
Knighton
Lampeter
Llanberis
Landilo
Llandovery
Llandrindod Wells
Llandudno
Llanelly
Llanfairfechan
Llanfyllin
Llangefni
Llangollen
Llanidloes
Llanrwst
Llantrisant
Llanwrtyd Wells
Llynvi Valley
Machynlleth
Menai Bridge
Merthyr Tydfil
Merhyr Vale
Milford Haven
Mold
Manmouth
Mountain Ash
Mynyddislwyn
Pontypridd
Porthcawl
Portmadoc
Port Talbot
Prestatyn
Presteigne
Pwllheli
Quakers Yard
Rhayader
Rhondda
Rhos
Rhyl
Rhymney
Risca
Ruthin
St. Asaph
St. Davids
Swansea
Tawe Valley
Tenby
Towyn
Tredegar
Welshpool
Whitland
Wrexham

13. SCOTTISH REGION—All undertakings in Scotland

GAS IN THE HOSPITAL SERVICE

Recently Mr. Aneurin Bevan, Minister of Health, opened an Exhibition at the Tea Centre, 22, Regent Street, S.W., primarily designed for hospital authorities, but also open to the general public.

This Exhibition, called the Hospitals (Domestic Aids) Exhibition, organized by the British Electrical Development Association and the British Gas Council at the request of the Ministry of Health, gave great scope to the manufacturers of gas-operated appliances to show how the Gas Industry can aid the domestic worker in hospitals and nursing homes, and by reducing the drudgery of this work help to solve the problem of shortage of labour. Gas equipment on view in the Exhibition is of the latest labour-saving design and shows how a wise choice in fuel will ease daily domestic life.

WOMEN'S GAS COUNCIL

At the first Executive Committee meeting of the Women's Gas Council, after the annual general meeting, the President, Lady Nunburnholme, suggested that in the present circumstances Miss K. M. Halpin, O.B.E., should continue as Chairman for the coming year, in spite of the fact that she had already served for two years, which had previously been agreed should be the normal period of office. The Executive Committee welcomed the suggestion and Miss Halpin accordingly will continue to be Chairman.

Members of the Hawick Branch are taking an active interest in the Gas Industry. Latest example of this is their visit to the Hawick gas-works, where the management demonstrated all the processes of gas production and the administrative effort behind the operation of a modern gas-works. Hawick is an important centre of tar production and during the visit the tar-making plant was inspected.

The Women's Gas Council has prepared a ten minute talk on fuel economy, called "Fuel Economy Without Hardship," for their branch members. The Women's Voluntary Services have taken 100 copies for distribution to their Fuel Leaders and the Ministry of Fuel and Power are having copies of the talk made to be distributed to all their regional offices.

MR. THERM'S "SOUND" PERFORMANCES

During the past few weeks the Cambridge University and Town Gas Light Company has screened a series of sound film programmes for the benefit of many schools in the area. This was made possible through the courtesy of the British Gas Council which supplied the film service complete with projector and operator. These films included "Manufacture of Gas," "Your New Kitchen," "Gas in Battledress" and a lively cartoon.

A testimony to the manner in which the subjects were dealt with was provided by the keen interest with which they were followed by the youthful audiences. Nine performances were given and the total attendance numbered 1,420.

The only untoward incident which occurred throughout the whole series was at the County High School for Girls, when a violent storm developed, causing the electric current to fail. It also resulted in the collapse of a window, causing minor casualties, but even this contingency was provided for and expert first aid was rendered by one of the Gas Company's staff, who was also a member of the Company's division of the St. John Ambulance Brigade. The show was reluctantly abandoned, but the disappointed scholars fully realized that it was not gas that had let them down.

THE GAS INDUSTRY IN GERMANY 1945-1947*

RESTORATION AND CONTROL IN THE BRITISH ZONE

By H. D. GREENWOOD, M.Sc.

(*Continued from p. 196*)

THE distribution of industrial gas to different types of consumers by the Ruhrgas A-G. in 1944 is given in Table 5, it will be noted that the iron, steel, and chemicals industries were by far the largest consumers. During the war compressed gas for motor vehicles was used on a large scale and accounted for over 5% of the industrial consumption. A feature which is peculiar to Germany is the joint ownership of pipe-lines and also the practice of the grid companies "carrying" gas from one point to another, but without actually purchasing it. This is practised on a considerable scale by both the Ruhrgas A-G. and the Thyssensche Gas- und Wasserwerke G.m.b.H.

Long-period contracts were made between the grid gas companies and the coke oven plants, and in some cases, gasholders, purification plant and compression plant were provided by the grid gas company. In other cases, there was a uniform charge for compression by the coke ovens.

The high-pressure pipe-lines varied from 100 to 800 mm.† diameter and worked at a pressure up to 36 atm. There were altogether some 30 holders for coke oven gas supply, all of the dry type, in the Ruhr

TABLE 5.—*Analysis of Consumption of Coke Oven Gas by Industrial Consumers* in Ruhr Area* : (1943-44)

Type of consumer	Gas per annum (million cu.m.)	%
Metallurgy (ferrous)	5,300	69.6
Metallurgy (non-ferrous)	184	2.4
Chemical	1,300	17.1
Mechanical Engineering	35	0.5
Building industries	142	1.9
Railways	29	0.4
Compressed gas for vehicles	420	5.5
Other uses	194	2.6
	7,604	100.0

and adjacent areas. Of these, four were owned or partly owned by the Ruhrgas A-G., and one by the Thyssensche Gas- und Wasserwerke G.m.b.H., representing about 10% of the maximum daily war-time grid load. In addition, the Ruhrgas A-G. had an underground high-pressure holder of 175,000 cu.m. capacity, which is the only one of its type in existence.

The Ruhrgas A-G. controlled its gas distribution from a central control room, at Essen, in which were remote pressure and volume recorders; these, together with an elaborate telephone system, allowed of central control of the whole area. In addition, there were five sub-stations in different parts of the distribution area, and 12 action squads for maintaining the pipe-line and carrying out emergency repairs.

Restoration of Gas Production and Supply

The Public Utilities Branch was initiated in March, 1945, and the Author proceeded shortly afterwards to join Supreme Headquarters Allied Expeditionary Force (S.H.A.E.F.) in Paris. A S.H.A.E.F. public utilities group had already been formed, and preliminary plans for the organization of public utilities control in Germany were prepared. The group subsequently moved to Rheims, with a forward office in Luxembourg, and later to Frankfort-on-the-Main. On the dissolution of S.H.A.E.F., the British and U.S. Zones set up their separate organizations, the policies of which, together with those of the Soviet and French Zones, were co-ordinated in a quadripartite committee in Berlin.

During this preliminary period between March and June, 1945, the Author paid several visits to Germany, inspecting such areas as became available as the German forces were driven eastwards. These preliminary reconnaissances were of the greatest value in providing first-hand information of the problems ahead. Full appreciation of the work involved in the restoration of supply was not possible until the destruction in Germany had been seen and the problems discussed with the Germans themselves.

The German Administration had completely broken down. There were no official sources from which information could be obtained about the conditions of gas supply in the different towns; accurate information was, therefore, not available until works had either been visited by British officers, or a German organization had been set up with authority to call for reports from individual works.

In order to appreciate the tasks which faced the original Military Government officers in June, 1945, a brief review of the conditions obtaining at that time is necessary.

All the larger towns had suffered severely from air raids, particularly in the densely populated Ruhr area in which there was no town which had not been severely damaged. Essen, in which 60% of the dwellings were rendered uninhabitable, is a fair example.

The task of dealing with air-raid damage in the later stages of the conflict had been entirely beyond the German Administration, and in many towns the first task of the British and U.S. Forces was to clear a way through the debris which covered the main thoroughfares. Under these millions of tons of rubble and debris lay gas and watermains and electric cables. It has been estimated, for example, that in Münster (with a normal population of 100,000) 4.5 million tons of rubble will have to be removed. The inhabitants of these derelict towns, of whom a surprising number seemed to have survived, lived in cellars and odd corners of damaged buildings. Even to-day, two years after the end of hostilities, side streets in some towns are impassable on account of rubble.

The collapse of the German Army was complete, and there was little evidence of "Werewolf" or other underground resistance. On the other hand, the country swarmed with displaced persons (D.P.s) of all nationalities, many of them out to pay off old scores on their previous masters. As darkness fell, robbery, looting, murder and rape were the order of the night, and to venture abroad alone and unarmed was foolhardy. Many of these people were verminous, and one moved in an atmosphere of D.D.T. powder. Accommodation was difficult; the Author well remembers visiting a Military Government (U.S.) detachment in Wesel, in a partly ruined house, half of which had no roof; there were no supplies of electricity, gas, or water, and everything had to be kept under guard to avoid looting.

The administration of the country had completely collapsed. Rail transport was non-existent, the only telephone communications being by radio or military signal lines. Road transport was limited to Army and Military Government vehicles. In each town, a Military Government office had been established, and to this came Germans of every calling; a mere handful of Military Government officers organized, controlled, advized, and helped the Germans.

The critics of the work of Military Government and of its successor, the Control Commission, might well reflect on the conditions which are so very inadequately described here, and of the hard work and devotion of those officers who brought some order and organization into a ruined and helpless community. It is hoped that some day the story of the achievements of Military Government in Germany will be put on record; a record of which this country may well be proud.

Re-Establishment of Gas Supply

Preliminary plans for the restoration of the gas supply were based on the provision of 50% of the previous total consumption for towns, it being assumed that initially there would be little industrial consumption and that there would be no street lighting. Previously domestic consumption had been approximately 60% of the total. When it was realized later that coal supplies would be below requirements, it was decided that water gas should be made wherever possible the calorific value of the mixed gas being reduced to 3,600 kcal. per cu.m.* This was considered to be the minimum value at which appliances could operate. In addition, benzole extraction was prohibited. (This instruction was withdrawn at the end of 1946.)

The first responsibility of the gas officers was to secure accurate situation reports from all gas undertakings in the British Zone.

* From Communication No. 316 of the Institution of Gas Engineers.
† 1 mm. = 0.039 in.
* These figures are estimated to conform to present consumer groups.

* To convert kcal. at 0° C. 760 mm. dry per cu.m. into B.Th.U. per cu.ft. at 60° F., 30 in. wet, multiply by 0.105.

For this purpose a German official was appointed in each region and made responsible for securing these reports. By the end of August 1945, the position of every undertaking was known, and it was possible to prepare plans for stepping up gas production and for the supply of materials for repairs.

During the period from V-Day to August, 1945, gas undertakings had operated with coal and materials in stock, for, with the exception of works near the collieries, there had been practically no delivery of coal.

Repairs to Works

When reports became available it was found that out of the 373 towns consuming gas in the British Zone, only about 60 were receiving supplies. Of these undertakings, 187 distributed coke oven gas and only about 10 of there were receiving supplies. In the 157 towns with their own production, only 50 gas-works were in operation. Of the remainder, 20 required repairs and the others were without coal.

At the end of the war gas supply had virtually broken down in Germany, particularly in the British Zone, which had received the majority of the air-raid damage.

In all the larger towns, the gas-works had suffered severely; in Hamburg all five works were badly damaged and only water gas was being made until July, 1945. In the Ruhr towns, most of which were supplied with coke oven gas, there was no gas supply, and the problem here was one of repair to the distribution systems.

Records show that some 70 gasholders at gas-works, with a combined storage capacity of about 750,000 cu.m. were completely destroyed. More than 100 holders were severely damaged, and more than 40 of these are still under repair. Many more holders less severely damaged have been given " first-aid " repairs and are now in use. In Berlin only one out of 38 holders was fit to be used in 1945.

The work of reconstruction and repair which faced the German Gas Industry was of an unprecedented magnitude. It is proposed to describe briefly the work involved in restoring gas supply to the town of Kiel, where the works were probably the most severely damaged of any in the Zone.

Kiel was one of the main German naval bases in the province of Schleswig-Holstein, and had a pre-war population of 240,000. The gas-works supplied 76,000 consumers and had an output of 5 million cu.m. a month. The plant had a capacity of 9 million cu.m. of coal gas and 3 million cu.m. of water gas a month, with a high pressure system distributing gas at a pressure of 1 to 2 atm. to adjacent areas.

The town suffered a number of raids from 1944 onwards, and by the end of that year consumers had fallen to 53,000. A very effective raid in April, 1945, unloaded 43 bombs on the gas-works, which was, not surprisingly, put completely out of action. Repairs were put in hand in June, 1945. At this time, there was plenty of unskilled labour from nearby prisoner-of-war camps, but, as found throughout the Zone, there was a great shortage of skilled mechanics and foremen. Extensive repairs were necessary to the carbonizing plant, and the coal-handling plant had to be almost completely reconstructed. All the seven holders were more or less badly damaged. The necessary materials for repairs were provided by cannibalization of existing plant and from stocks of spare parts, &c., which, fortunately, were held on the works. In addition, materials were salvaged from various wrecked industrial plants in the immediate neighbourhood. Some 1,200 men were employed in repairs to the works and to the distribution system in which there were more than 1,000 breaks. As in all these badly damaged towns, main repairs could not proceed until the thousands of tons of debris had been cleared from the streets and destroyed buildings.

Production recommenced on Dec. 1, 1945, at the rate of 40,000 cu.m. a day, supplying some 20,000 consumers. Since that date, production has steadily mounted, this being limited not so much by plant capacity as by the allocation of coal. At the present time, some 40,000 consumers are being supplied with about 100,000 cu.m. a day, representing 60% of the former consumption. The normal unaccounted-for gas was about 10% rising in 1944 to 40%. On resumption of supply in 1945, the figure had risen to 70%, but fell progressively to under 20% within the next six months. It must be appreciated that a relatively small proportion of this is due to actual leakage, the remainder being accounted for by inaccurate meters and unmetered consumption.

The cost of the complete reconstruction at Kiel is estimated at 17.8 million Reichsmarks, of which 9 million has already been expended. The original capital value of the undertaking is stated to be 24 million Reichsmarks. Costs of the above order, which are repeated in many towns of Germany, give some indication of the financial burden which German economy now has to bear.

Repairs to Mains and Services in Towns

This has been, and will long continue to be, the greatest problem. The above description of the work in Kiel gives an indication of the problem which was repeated in many towns. Two further examples may be given:

Hamburg

In Hamburg, the largest city in the British Zone, with 1.4 million inhabitants, gas supply has been progressively restored over a period of 18 months, production being increased as additional areas of supply were repaired and made fit for use. The city was divided into 25 areas for ease of installation with the minimum pipe cutting, and, where possible, the areas in which electric supply was inadequate were given first priority for gas. Mains were tested under pressure in each area, and repairs continued until the leakage was less than 30 litres per cu.m. of main per hour. (The pre-war figure was 22.4.) All 25 areas now have gas supply, and it is recorded that 16,000 breaks have been repaired.

Berlin

In Berlin, less than 1% of the high and low pressure mains were serviceable in June, 1945, there being more than 2,000 recorded breaks and the greater part of the low pressure system being water-logged, while nearly all the bridges over the city's many waterways were destroyed, and with them the gas mains. By the end of 1946, 94% of the mains were in operation, the remaining 6% being mainly in the centre of the city, which is totally destroyed, and in which it had been agreed that no gas supply would be required. Altogether some 2,700 major breaks have been repaired.

Unaccounted-for Gas

As had been anticipated, the first returns from gas undertakings showed alarming figures for unaccounted-for gas, these being as high as 70% in some of the Ruhr towns. The Germans were anxious to maintain the supply, irrespective of cost or apparently of danger to the population, and it was necessary in some cases to withdraw permission until the " loss " had been reduced. It was, of course known that a considerable proportion of the unaccounted-for gas figure was due to unmetered consumption and faulty meters, and it has been difficult to secure accurate information about actual losses. At the present time, the unaccounted-for gas over the whole Zone is 18%. The problem of reducing this loss is twofold—*i.e.*, repairs to mains and services, and installation of new and repair of faulty meters. The meter position is very difficult.

Summary of Position at End of 1946

In June of 1945, there were 107 works out of action due to lack of coal and damage to works. There are now only 10 works out of action, eight of which require extensive repairs, and in some of these the town is virtually destroyed and there is no object in rebuilding the works. There are a number of small communities (16 in all), normally supplied from adjacent gas undertakings, which have not yet received a supply because of coal shortage.

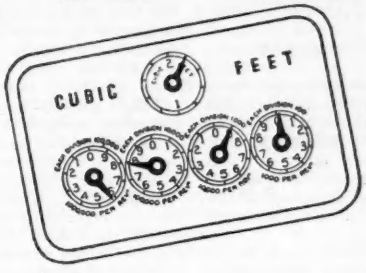
In June, 1945, gas-works carbonized some 23,000 tons compared with the normal figure of 200,000 tons a month. This figure increased gradually as coal became available, until January, 1946, when a reduction became necessary consequent upon transport difficulties. Similarly in March, the reduction in food rations to the Ruhr miners was accompanied by a drastic fall in coal output, and allocations were reduced to all consumers. Since October, 1946, coal deliveries have been erratic and it has not been possible to maintain the planned increase in gas output to meet the ever-growing industrial and domestic demand. Gas production has increased from about 10 million to 45 million cu.m. per month, compared with the 1943 output of 65 million. It will be noted that the yield per ton increased as conditions improved and the calorific value was reduced to 3,600 kcal. per cu.m. It has fallen recently since the calorific value has been increased from 3,600 to 3,800 kcal. per cu.m.

Restoration of Gas Grid System

From the industrial standpoint, the restoration of grid gas supply was of major importance, and there were some 160 towns entirely dependent on this source of supply. A preliminary investigation by the Author in May, 1945, disclosed that there were only 18 coke oven plants in partial operation, carbonizing about 5,000 tons of coal per day, representing 4% of the normal capacity of the coke oven plants. The remainder of the 80 coke oven plants were out of action as a result of damage by air attack or artillery fire or due to lack of coal, water, and power, and in the majority of cases these ovens had become cold.

(*To be continued.*)

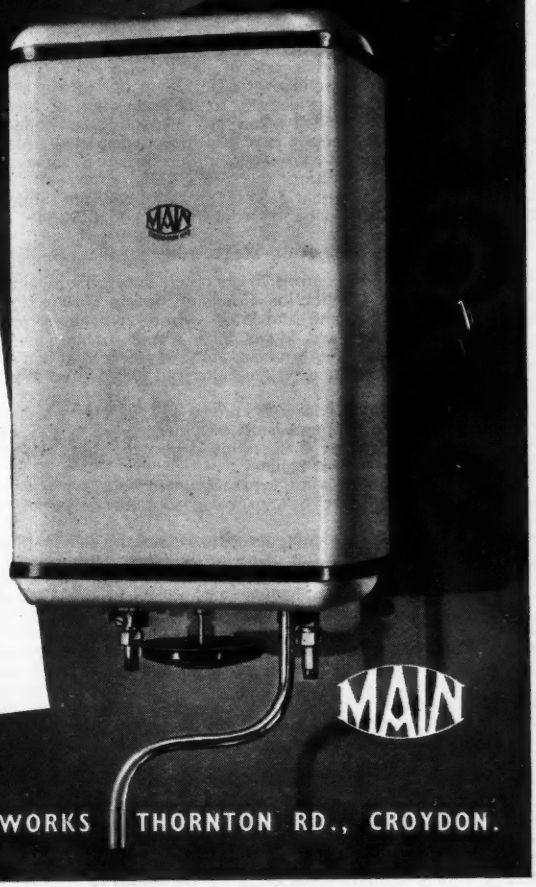
easy on the Gas



The new Thermain No. 2 is a water heater which in its design and operation anticipates and discounts the effects of the present stringent fuel economy drive, not to mention the threat of future rationing. • Its principal merits, technically, are its rapid heating-up and recovery times—a full two gallons from cold to 140° F. in about 20 minutes—due to its selected gas rate and special thermostat. Its low maintenance consumption—after heating-up, 300/400 B.Th.U./hour — is the result of heavy and effective lagging and its simple and lasting non-condensing heat exchanger. • The control is by the "Flap-Stat," which definitely ensures that gas burns at the full-on rate until the water reaches the desired temperature, at which point, *and not before*, it immediately cuts down the gas to the low maintenance rate. Conversely the gas is again turned to full-on as soon as any water is drawn off. • The new Thermain No. 2 also introduces many important long-life features and has been constructed on a principle of robust simplicity that enables it to be installed, operated, and maintained at surprisingly little cost.

BRIEF DATA

1. Capacity 2 gallons.
2. Full gas-rate, 7,500 B.Th.U. hr.
3. Maintenance temperature 140°.
4. Dimensions, overall height 27¼ in. by 11 in. wide by 8 in. deep.
5. Finished in cream enamel picked out with black.



THE THERMAIN No. 2 sink storage water heater

MAIN

MAIN WATER HEATERS LTD., GOTHIC WORKS | THORNTON RD., CROYDON.

COMPANY MEETING

UNITED KINGDOM GAS CORPORATION

INCREASED REVENUE : BIG DEVELOPMENT SCHEMES

The Annual General Meeting of United Kingdom Gas Corporation, Ltd., was held in London on July 22, 1947.

Colonel **W. Moncrieff Carr,** O.B.E., T.D., the Managing Director, who presided, said:

It is with profound sorrow that I have to announce the sudden death of our Chairman, Mr. Bruce Ottley, on the eve of this meeting after an illness lasting only a few days. It is a great shock and a severe blow to all his colleagues on the Board of our Corporation who owe such a lot to his wide knowledge of affairs, delicate judgment, and deep humanity. Men so gifted as your Chairman are rare indeed and his untimely passing is a grievous loss. I wish on behalf of the Board and Shareholders of this Corporation to convey our deep sympathy to his relatives.

The report and accounts of the 12th year of your Corporation's activities are now in your hands, and I will draw your attention to one or two of its more important features. The net revenue for the year, after providing for income tax, interest and other expenses, amounts to £160,090, which compares with £137,470 for the previous year. This reflects to some extent the results of your Directors' policy, followed ever since the Corporation's inception, of foregoing dividends in undertakings requiring major reconstruction, and in other cases, ploughing back to the immediate benefit of the consumer and now the shareholder, profits which could have been distributed in the way of dividend.

Balance Sheet Changes

Turning to the balance sheet, you will observe that we were able to issue a further £1,000,000 of 3½% Debenture stock in the course of the year, which enabled us to repay to our bankers the loan incurred for the development of our business during the war years and to leave us with a substantial figure of cash. The sum of £19,111 has been provided for the writing off of certain unremunerative items such as commissions, expenses of issue, and premiums on redemption. Lastly we have felt justified in recommending a final dividend of 4½% on the Ordinary stock, making 7% for the year as compared with 6% for the previous period.

The item "creditors" which appears at £136,771 as compared with £63,777 last year reflects an increase in the transactions of central administration. On the other side of the balance sheet, you will observe that there is an increase of £313,518 in our investments in subsidiary companies, due principally to the acquisition of Merthyr Tydfil and additional capital taken up in various controlled us takings. On the other hand, we have disposed of some small holdings in gas undertakings which we now feel are unlikely ever to come under the control of our Corporation.

Under the heading "Current Assets" amounts due from subsidiary companies show a slight decrease from £189,544 to £186,949.

Activities Reviewed

Your Corporation now controls 76 gas supply undertakings, and the West Yorkshire Gas Distribution Company, in six fairly compact districts of England, Scotland, and Wales. In the year under review the supply undertakings sold 14,008 million cu.ft. of gas, and the gas distribution company 3,616 million cu.ft. of gas, a total of 17,624 million cu.ft. The supply undertakings also sold 308,557 tons of coke, and over 9 million gall. of tar.

The number of domestic consumers served was 428,278 representing just about 4% of the total number of consumers served by the entire British Gas Industry. Your Corporation is now the third or fourth largest gas enterprise in this country.

Gas sales to domestic consumers accounted for approximately two-thirds of the total, the balance being sold for industrial and commercial use.

Industrial demand for gas continues to grow and this steady growth must to a large extent shape our plans for the future. Because of its cleanness, controllability, high efficiency under all conditions, and its marked effect in increasing production and lowering production costs, gas is the ideal fuel for industrial heating, and I envisage the day when its use for this purpose will be universal in this country.

Indicative of the efficiency with which our undertakings have been conducted is the fact that the price at which our gas has been sold has averaged 10.445d. per therm in the year under review as against 8.682d. per therm in 1939, an increase of only 20%, although the price of coal, our raw material, has risen in the same period by 98% and our expenditure on salaries and wages by 145%.

Post-War Development Schemes

With regard to the development of the schemes which we had prepared at the end of the war we have now received sanction from the Ministry of Fuel and Power to proceed with new works and distribution plant to the value of approximately £3,000,000; these schemes will eventually involve a total capital outlay in the region of £4,500,000. The new production units which are to be constructed will be capable ultimately of carbonizing some 1,162,000 tons of coal yearly and of producing an annual total of 22,500 million cu.ft. of gas, over 500,000 tons of coke, and 13 million gall. of tar. By and large they will eventually more than double our present productive capacity.

Taken jointly, these schemes constitute a very large contribution indeed to the country's fuel economy. Inasmuch as each ton of coal converted before use into gas or coke does the work of two tons burnt in the raw state, these various new works should ultimately save the nation more than a million tons of coal yearly.

With regard to the financing of these expansion schemes, which we are vigorously pushing forward irrespective of their ultimate ownership, I should like to offer a word of reassurance to our existing shareholders. I am able to say the Industry has received an undertaking from the Government that existing shareholders and those putting up fresh capital in the "interim" period will not be prejudiced in the event of nationalization.

Danger of Upsetting Balance at Present Time

With regard to the immediate future I submit that while the present fuel crisis continues to exist and we are still unable to breathe freely, it would involve the delicate balance of the Industry in the most disastrous consequences to institute any radical changes in its structure and control. Only by straining our resources to the utmost, by all sorts of improvisations, quick decisions, and day by day adjustments of policy have we in the Gas Industry been able to cope with the task of maintaining continuous supplies to the public.

Thanks to this freedom to do as we thought best—within the limits imposed by shortage and inferior quality of the coal we now receive and by the difficulties arising from restrictive controls and shortages of labour and materials generally—the Industry has not once failed the public it serves. But the Industry has been stretched to the limit in order to achieve this and until coal production reaches safety level again the Industry will remain in a state of very delicate equilibrium which any violent changes might disastrously upset. Purely therefore from the standpoint of national expediency and without commenting at all on nationalization as a political or economic principle I submi that to go forward with nationalization at the present critical time will involve the Industry and the public in quite unnecessary dangers.

In connexion with present difficulties may I here suggest that the National Coal Board should give serious study to improving the quality of the coal offered to industry and the public. As the principal industry concerned with extracting the energy latent in coal we are badly handicapped by having to use as our raw material coals we never would have contemplated using under the conditions of free competition that obtained prior to the setting up of the coal selling schemes in 1935. During the war qualities deteriorated severely owing to the impossibility of maintaining washing plants at the collieries at high efficiency, but contrary to expectations, instead of improving the coal offered to us has steadily grown worse since the war. To-day it may contain as much as 20 to 25% inert matter—in plain words, dirt—which should, of course, be eliminated at the collieries before the coal is delivered. It may well be that both the Government and public are being gravely misled in appraising progress towards our national coal targets by statistics that are themselves misleading insofar as they assess as coal production coal that contains varying but substantial proportions of unusable dirt. The solution of this problem ought not to be beyond the powers of the Coal Board. Cleaner coal would certainly be a great economy in the Gas Industry, rendering more plant available and resulting in a much better quality of coke.

Priority Needed

May I also make a plea for a closer appreciation by the authorities of the immense importance to the country's fuel economy of pushing forward expansion of the production and use of gas with the greatest possible rapidity. Shortages of materials, lack of first priorities in getting them, and bureaucratic delays have held up schemes which would save millions of tons of coal at present wasted in the form of smoke or through inefficient utilization. The Gas Industry can provide the answer to the country's fuel shortage. But it needs first priority in getting at the materials required for its new works if these are not to be held up unnecessarily. Since all our industrial effort in the long run depends on adequate supplies of fuel, the Gas Industry should enjoy absolute priority of access to available materials and manufacturing facilities.

Our primary consideration as a publicy owned enterprise in a competitive fuel world has been to cheapen and improve our service. So far it would appeara that no attempt has been made by the Government to apply this yardstick to nationalization. On the contrary, there is every indication that nationalization will give rise to new administrative and overhead charges that may result in a more costly if not less efficient service to the public.

Your Corporation has had extensive experience in the past decade in centralization of production, integration, and group management. This has been sufficient to enable us to appreciate the necessity of continuing the identity and maintaining the local direction and control of the individual undertakings under our financial control and management as the best means of providing a cheap and efficient service. In other words success has been achieved by preserving the identity of the existing undertakings reinforced by the skilled advisory, technical, and administrative services supplied by your Corporation's headquarters staff. I cannot over-stress the value of the maintenance of the financial entity and individual direction and management of your subsidiary companies as a means of control to secure maximum efficiency through the proper delegation of responsibility.

The Price Factor

A successful Gas Industry is in my view an industry able to supply abundant gas of good quality at the cheapest possible price to its customers, the homes and industries of our land. The price factor is all-important because it directly or indirectly affects production costs of virtually everything manufactured for sale at home or abroad. As competition increases, the prices at which we offer our exports will become increasingly important in retaining our overseas markets and in paying for the precious imports of food and raw materials which condition our standards of life. Therefore it behoves us in studying the future of the Gas Industry to keep the price factor as a basic yardstick in measuring efficiency.

With the future of coal so uncertain as regards both output and cost, surely it is increasingly important to utilize it to the utmost advantage by conversion to gas, coke, and other products and by building on the existing well-established and efficient structure to avoid the addition of any unnecessary cost burdens.

I should like to express my appreciation and that of all my colleagues on the Board of the excellent work and energy displayed—under continuing difficult conditions—by the Managers, staffs, and personnel of our subsidiary undertakings, by our General Manager, Mr. Hodkinson, and all the personnel employed at our Manchester headquarters, and also by Mr. Nichol and our secretarial staff at Bishopsgate. Despite the manifold obstacles and hindrances thrown in our path, we and they shall not in any way abate our efforts on behalf of the Industry in general, and our great Corporation in particular.

The report and accounts were unanimously adopted.

GAS STOCKS AND SHARES

Stock market conditions were generally dull throughout the week, and a fall in British funds was followed, through lack of buying interest, by a downward movement in the industrial market. There was a daily decline in turnover, the number of dealings officially recorded on Thursday falling to 7,528 compared with 8,211 a week earlier and 11,015 a fortnight earlier.

Conditions in the gas stock market were reported to be quietly steady, but the number of dealings was considerably below recent averages. Early in the week South Metropolitan Ordinary rose by ½ to 100, and United Kingdom Gas Corporation, on the strength of the published results, rose 6d. to 24s., but closing prices showed no changes compared with the previous week-end.

Rises and falls recorded during the week were as follows:

OFFICIAL LIST

Commercial, ord.	87	— 90	— ½
Gas Light and Coke, 4½ p.c. red. deb.	104	—107	+ 1
Montevideo, Ltd., ord.	128	—133	+ 3
Primitiva Holdings, Ltd., ord. ...	10/-	— 12/-	— 6d.
South Eastern Gas, Ltd., ord. ...	20-/	— 22/-	+ 6d.
South Suburban 5 p.c. perp. deb.	120	—125	— 1
Sunderland, ord.	115	—120	— 8
Wandsworth, 5 p.c. irred. deb. ...	120	—125	— 1
Wolverhampton, cons. ord. ...	125	—130	— 10

GAS PRODUCTS PRICES

The London Market

July 26

There are no changes to report in the prices of coal tar products.

The Provinces

July 26

Average prices for gas-works products this week are: Pitch, 75s. per ton; toluole, naked, North, 90's, 2s. 4d. to 2s. 6¾d. per gall.; pure, 3s. 2¼d. Prices for carbolic acid 60's anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.) and strained anthracene oil are controlled by Government Orders. Prices for road tar are increased by one penny per gall. by S. R. & O. 1947, 177.

Scotland

July 26

Export demand continues in excess of supply.

Refined tar.* Yield to the distiller is 6d. per gall. ex works, naked. Creosote oil. Timber preserving quality,* 5¼d. to 6¼d. per gall.; hydrogenation oil,* 5¾d. per gall.; low gravity or virgin oil,† 7¼d. to 7½d. per gall.; benzol absorbing oil, 6¼d. to 8d. per gall. Refined cresylic acid is 3s. 6d. to 4s. 6d. per gall. ex works, naked, according to quality. Crude naphtha,† 7d. to 8d. per gall. Solvent naphtha.* Basic maximum prices delivered in bulk, 90/160 grade 2s. 10d. per gall, and 90/190 heavy naphtha, unrectified 2s. 0½d. per gall, rectified 2s. 4d. gall. Pyridine,† 90/160 grade 15s. per gall., and 90/140 grade 17s. per gall.

* Price controlled. † Uncontrolled.

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